Fermilab Today

Thursday, June 23, 2005

Calendar

Thursday, June 23

2:30 p.m. Theoretical Physics Seminar - Curia II
Speaker: A. Weiler, Technische Universitat, Munich
Title: Impact of Extra-Dimensional Physics on Rare Kaon Decays
3:30 p.m. DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over
THERE WILL BE NO ACCELERATOR PHYSICS AND TECHNOLOGY SEMINAR TODAY

Friday, June 24

10:00 a.m. - 5:30 p.m. Tevatron Connection - Ramsey Auditorium
3:30 p.m. DIRECTOR'S COFFEE BREAK - 2nd Flr X-Over
8:00 p.m. Fermilab Film Series - Ramsey Auditorium
Title: This is Spinal Tap
THERE WILL BE NO JOINT EXPERIMENTAL THEORETICAL PHYSICS SEMINAR THIS WEEK

Saturday, June 25

9:00 a.m. - 12:00 p.m. Tevatron Connection - Ramsey Auditorium
8:00 p.m. Fermilab Arts Series - Ramsey Auditorium
Title: Cascada de Flores

Weather

Mostly Sunny **94º/69º**

Extended Forecast

Weather at Fermilab

Faces of DASTOW Will Set Enthusiastic Tone Today

The annual group photo kicks off DASTOW '05 today at 8:30 a.m. on the front steps of Wilson Hall. (Click on image for larger version.)

DASTOW '05 gets rolling at 8:30 a.m. today with the group portrait on the front steps of Wilson Hall, and Fermilab user Pierrick Hanlet of MINOS and the Illinois Institute of Technology views this annual assemblage of young smiling faces as both genuine and encouraging.

Pierrick Hanlet

"It's been a long time since I've had the impression that 'pure' research is well supported in our society," says Hanlet. "However, I am always heartened when I see the enthusiasm of young people when they come for DASTOW. For them, even if they don't end up studying physics, it's still cool stuff. My daughters, 14 and 12 years of age, are very excited about coming this year. I find this is encouraging. And I'm happy to learn that some new activities are geared for their age group."

A new parallel program will be underway

Fermilab Result of the Week

Observing the Top with Electrons and Muons

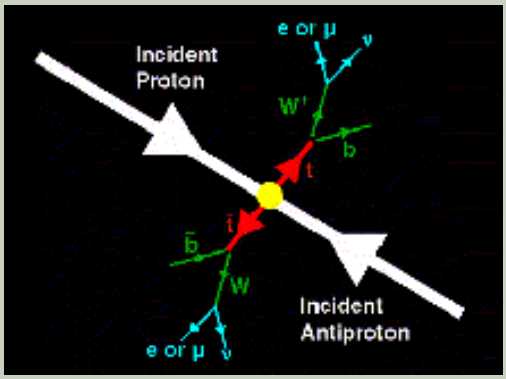

Diagram showing the pair production and the decays of top quark into W bosons and bottom quarks. The subsequent decays of W bosons result in a dilepton signature.

The discovery of the top quark at Fermilab's Tevatron collider in 1995 by the CDF and DZero collaborations provided direct experimental evidence for the three generation structure of the Standard Model. Because of the small production rate of top-antitop pairs (about one in a few billion proton-antiproton collisions), many properties of the top quark have yet to be explored in detail. A precise measurement of the top-antitop production rate in all its final states is a powerful tool to test that the observed particle has indeed the properties expected for the top quark.

Bob Kehoe

As the heaviest elementary particle, the top quark has an extremely short lifetime, decaying immediately into a lighter bottom quark and a W boson. Both bottom quark and W boson, which are also unstable, then

Current Security Status

Secon Level 3

Wilson Hall Cafe

Thursday, June 23

Santa Fe Black Bean Soup
Sloppy Joe $4.85
Tex-Mex Lasagna $3.75
Sauteed Liver and Onions $3.75
Baked Ham and Swiss on a Ciabatta Roll $4.85
California Pizza $3.00
Crispy Fried Chicken Ranch Salad $4.85

The Wilson Hall Cafe now accepts Visa, Master Card, Discover and American Express at Cash Register #1.

Wilson Hall Cafe Menu
Chez Leon is now open. Call x4512 to make your reservation.

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in One West, designed for youngsters around middle school age. At 9 a.m., Don Lincoln of DZero illustrates physics principles of Forces and Motion. At 10 a.m., Debbie Harris of Particle Physics Division's new Neutrino Department discusses Physics in the Real World. At 11 a.m., Linda Valerio of Accelerator Division's Mechanical Support Department hosts a presentation on the Physics of Sports. And there's another new activity on tap: at 9 a.m., 10 a.m. or 11 a.m., you can meet guides at the Covered Wagon outside the Lederman Science Education Center for Pioneer Adventures on the Fermilab Prairie Trail.

Following the group portrait at 8:30 a.m., there will be an assembly for all participants at 8:45 a.m. in Ramsey Auditorium to go over the schedule and safety guidelines. The events geared for younger kids will begin with The Cryo Show, with Jerry Zimmerman on stage at 9 a.m in Ramsey Auditorium. At 10 a.m., the bus will load at the front steps of Wilson Hall for the ride to the Fire Department, and from there on to the buffalo pasture at 11 a.m. Then it's back to Wilson Hall for a hot dog lunch (no signups required). After lunch, parents are free to have their children visit them at their workplace, always depending on permission on supervisors and careful attention to safety rules.

Plan to have a fun day - and a safe one.

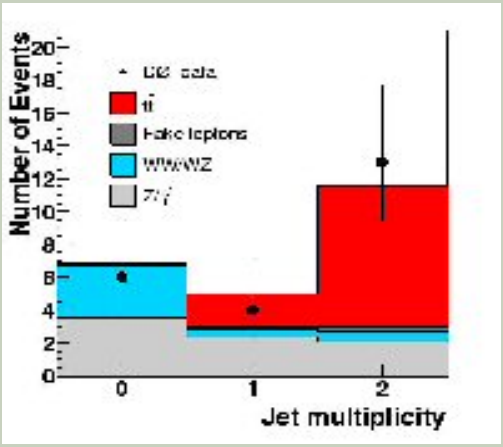
Information and schedule

--Mike Perricone

ILC This Week

Status Report by GDE Director Barry Barish

decay into lighter particles. A W boson can decay to either a light quark pair or a lepton-neutrino pair. The W decays determine the final-state signatures of top-antitop pairs. The events in which both W bosons (one from the top quark and the other from antitop quark) decay into leptons (electrons/muons and neutrinos) have the rare "dilepton" signature. If only one of the W bosons decays into leptons, the events have the so called "lepton+jet" signature.



The figure shows the predicted number of dilepton events from top quark decays (red) and the background processes in events with 0, 1 and 2 or more jets of hadrons. The points show the number of events observed by DZero.

Thanks to the improved lepton identification capabilities of the DZero Run II detector and the much larger datasets offered by the Run II of the Tevatron, it is possible to observe unambiguously for the first time the top quark in the rare dilepton final states. Within the precision of this new measurement the production rate is in good agreement with both the standard model and the production rate measured by DZero in the lepton+jet final state.

Full article submitted for publication

Longer plain English summary

International Technology Recommendation Panel. Front row, left to right: Akira Masaike, George Kalmus, Volker Soergel, Barry Barish, Giorgio Bellettini, Hirotaka Sugawara,Paul Grannis Back row: Gyung-Su Lee, Jean-Eude Augustin, David Plane (secretary), Jonathan Bagger, Norbert Holtkamp, Katsunobu Oide (Click on image for larger version.)

Today, I want to briefly describe the process that led to choosing superconducting rf technology as the basis of the main linac technology for the global design effort. As I discussed last week, a decade of extensive R&D toward a linear collider demonstrated that it would be possible to build a linear collider using either room temperature copper structures or using superconducting rf cavities.

Read more

Linear Collider News Archive

Accelerator Update

June 20 - June 22

- During this 48 hour period, Operations established one store that combined with an existing store provided approx. 40 hours and 13 minutes of luminosity to the experiments
- CUB LCW pump failed
- Mysterious "glitch" trips off TEL

Read the Current Accelerator Update

Read the Early Bird Report

(Left to right) (Top) Joe Kozminski (Michigan), Stefan Anderson (Arizona), Prolay Kumar Mal (TIFR), (bottom) Christophe Clement (Stockholm), Jessica Leveque (Arizona), and Bob Kehoe (Southern Methodist University, pictured above) have contributed to this result.(Click on image for larger version.)

Electrical engineer John Anderson (left) and technician Mike Cherry are among those who provide invaluable technical support for the Dzero calorimeter and muon systems. The excellent performance of these systems is central to the measurement presented here.

Result of the Week Archive

Announcements

Tevatron Connection

Save the date! The second annual **Tevatron Connection** will take place Friday and Saturday in Ramsey Auditorium, offering a series of CDF and DZero presentations with theoretical perspectives.

2-for-1 Tickets for Symmetry Premiere

Until July 10, Victory Gardens Theater in Chicago will show the play Symmetry, the world premiere of David C. Field's drama pitting big business, pure science and power politics. Set in present time, the play portraits a brilliant young physicist

View the Tevatron Luminosity Charts

In the News

From *Interactions News Wire*, June 20, 2005

G-Zero Finds that Ghostly Strange Quarks Influence Proton Structure

In research performed at the Department of Energy's Jefferson Lab, nuclear physicists have found that strange quarks do contribute to the structure of the proton. This result indicates that, just as previous experiments have hinted, strange quarks in the proton's quark-gluon sea contribute to a proton's properties. The result comes from work performed by the G-Zero collaboration, an international group of 108 physicists from 19 institutions and was presented at a Jefferson Lab physics seminar June 17.

Read more

determined to escape the obscurity of his small southwestern university. To receive tickets at a 2-for-1 discount, Fermilab employees should call 773-871-3000 and mention this announcement.

more information